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Small business, innovation, and jobs

Employment Growth from Public Support of Innovation in Small Firms. By Albert N. Link and John T. Scott, Kalamazoo, MI, W. E. Upjohn Institute for Employment Research, 2012, 189 pp., \$18.00 paperback.

The success story is familiar: an idea leads to a startup—a startup grows from just a few employees to hundreds—profits are made—jobs created—and the company is eventually sold for a lot of money. So, what's the formula for success for some startups at the same time that many others fail? Is it a blend of “Yankee ingenuity,” venture capital, and crowd funding, defined as “the collection of finance to sustain an initiative from a large pool of backers?” Is public sector support the key ingredient for a winning recipe?

In *Employment Growth from Public Support of Innovation in Small Firms*, authors Albert N. Link and John T. Scott explain that their emphasis on employment growth was motivated “not only by the academic literature, but also by the current policy emphasis on job growth, especially as it relates to public support of innovation in small firms.” The American Recovery and Reinvestment Act of 2009 was intended to help create jobs and spur technological advances, and with increased attention focused on entrepreneurship and small businesses, it is no surprise that researchers want to study the nexus of small-business innovation and job growth. Why do small businesses deserve our attention? Aside from the fact that most businesses are, by definition, “small,” the authors cite research that references job creation numbers: on average, about 60 percent of all jobs in the United States are generated by firms with 20 or fewer employees, and independent, small entrepreneurs account for a big piece of that. I would add that recent research from the BLS Business Employment Dynamics program indicates that over half of the firms that experienced *high growth* from 2009 to 2012 had less than 10 employees in 2009.

Link and Scott examine a rich dataset they did not have to create, a dataset based on the Small Business Innovation Research program. More than 30 years ago, Congress passed the Small Business Innovation Development Act (P.L. 97-219), which created the Small Business Innovation Research (SBIR) program, a “public–private partnership that provides research grants to small firms” to fund projects that are expected to yield commercially applicable results. Through fiscal year 2009, over 112,500 grants were awarded, totaling more than \$26.9 billion. Congress has since extended the SBIR program multiple times, most recently through 2017. Interestingly, as the authors point out, employment growth was never a stated objective of the SBIR program.

The database, containing extensive information about SBIR projects completed between 1992 and 2001, was created by the National Research Council (NRC), the organization charged with evaluating, on the basis of projects completed by the five largest agencies receiving grants, the economic benefits achieved by the SBIR program. The rich dataset includes variables such as *number of employees*, *number hired as a result of SBIR award*, and *number retained after project completion*, and it has spawned more than a few informative studies. Involved in the original research group that analyzed the database, Professor Link joins Professor Scott to author this study, which reflects not only their intimate knowledge of the

data, but also their economics perspective and policy awareness. Their goal is to glean the data for lessons to be applied today— lessons that could be especially relevant for the current economic recovery.

What makes this work interesting is how the authors approach and analyze the NRC database. The authors test multiple hypotheses and construct a number of variables to examine the full impact of SBIR funding on growth, touching on intellectual property, firm characteristics, and the likelihood of commercialization. Their approach is quantitative and substantive, but far from conclusive.

The authors find that “just over two-fifths of all completed projects retained no employees, and over one-third retained only one or two employees.” These numbers are hardly convincing, but the authors assert, “Despite the lack of statistical significance in the average employment gains for firms after receiving a sampled award, there are numerous individual cases of significant gains (statistically and economically) and large ranges in significance of the gains in the individual cases for all agencies.”

Link and Scott do discuss some of the limitations of their study. NRC data are “not sufficient to track employees hired into a funded project” and then retained after the project is completed. The data lead to conflicting results, largely because of the wide variation among projects. “What impact there is varies systematically across agencies based on distinct project and firm characteristics.” The authors did not expect to make generalizations about the employment impact of SBIR awards in such a cross-agency analysis. Rather, as they point out, “We are only emphasizing behavioral and descriptive differences in agency projects.” An additional limitation inherent in the data is the lack of information about occupations. If there is job growth, where is it occurring? The authors acknowledge that, in small research firms, technical workers often “wear many hats,” being involved in research, marketing, and management, but the question remains. Another factor that is not completely addressed is the geographic variable. A region variable was used to control for regional differences, but it begs the question, “What about metropolitan area variation and city size?”

Because of limitations related to sample size and the nature of the data, the authors artfully construct a parsimonious model to examine the data. In what they call a “quite novel and exploratory” analysis, the authors construct a number of variables that touch on outside financing, commercial agreements, and firm founders’ backgrounds, among others. But, “Because of the exploratory nature of the performance model and empirical analysis in this chapter, we exercise caution in interpreting the results from a policy perspective.”

Nevertheless, mindful of economic theory, Link and Scott lay out in detail the implications for future public policy. They point out that employment effects can result from commercial agreements. Despite a lack of significant growth in the firm, such effects “may show up elsewhere in the U.S. economy and in foreign markets.” These “spillovers of value” resulting from research and development “are at the heart of market failure, which is the *raison d’être* for the public support of R&D in small entrepreneurial firms.” Put differently, public funding support, such as the SBIR, increases “the firm’s expected private rate of return and thereby reduces the downside risk associated with undertaking R&D.” For the SBIR program, as Professor Link testified before the Subcommittee on Health Care and Technology in 2011, the program’s success can be gauged by 50 percent of funded projects resulting in new technology brought to market. “Employment growth occurs in funded companies in areas beyond those directly associated with the project.” That employment effect exists, but is difficult to fully measure, as the authors have succeeded in demonstrating.

Although this short book may be intimidating to the less statistically inclined, it offers a lot of food for thought for researchers, economic development professionals, and policymakers who are interested in small-business innovation. If nothing else, the reader of this work will gain an economist's perspective about a hot topic with potentially far-reaching implications.

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